

Agricultural Science & Technology II

Levels: Grades 10-12
Units of Credit: Year (1.0)
CIP Code: 010321
Prerequisite: None

COURSE DESCRIPTION

Students will be exposed to a wide range of basic animal and plant science principles, such as genetics, anatomy, physiology/nutrition, disease, pests, and management practices. Basic agribusiness principles, as they relate to plant and animal production, will also be covered. Career opportunities and educational preparation are examined. Learning activities are varied, with classroom, laboratory, and field experiences emphasized.

CORE STANDARDS, OBJECTIVES, AND INDICATORS

STANDARD

010321-01 Students will understand the integral nature of the Agricultural Education Program.

OBJECTIVES

010321-0101 Students will understand and demonstrate the role of FFA in Agricultural Education.

- Write or recite the FFA motto
- List the FFA colors
- List and describe the symbols of the FFA emblem
- List and describe the four kinds of membership
- Write the primary aim of the FFA
- List six specific purposes of the FFA
- State the proper uses of the FFA jacket and the Code of Ethics for FFA members
- Identify the correct date for the historical highlights of FFA
- List the four FFA degrees
- Name the offices and symbols for each office in the FFA
- List eight ways to work toward becoming a chapter leader
- Describe the official dress code for females and males in the FFA
- List four benefits when participating in the FFA
- Recite the FFA Creed
- Attend an FFA meeting
- List two specific duties of FFA chapter officers
- List two of the State, National contests and FFA awards
- Develop leadership qualities for personal goals using communication skills
- Outline the leadership structure in the FFA (committees, officer responsibilities)
- Demonstrate a members role in opening and closing ceremonies

010321-0102 Students will understand and demonstrate the role of Supervised Agricultural Experience (SAE) Program in Agricultural Education.

- Identify agricultural interests and/or career goals
- Define SAE and identify the types of SAE
- List reasons for participating in a SAE
- Define improvement activities and identify their role in SAE programs
- List five characteristics of a SAE
- List six responsibilities in conducting a SAE
- Prepare a plan for a long-term SAE
- Arrange in order steps involved in obtaining a loan from a credit service

- List the types of SAE records
- List five reasons for keeping records on a SAE
- In an approved record book, record all transactions and activities on a SAE
- Explain why record keeping is important in obtaining a loan from the bank
- Determine the overall quality of current SAE and determine how to make it more productive or profitable

STANDARD

010321-02 Students will understand animal anatomy and physiology as it relates to nutrition, health, and management of domesticated animals.

OBJECTIVES

- 010321-0201 Students will demonstrate knowledge of skeletal, muscular, respiratory, digestive, and circulatory systems of animals.
- 010321-0202 Students will describe the role of bacteria, fungi, viruses, genetics, and nutrition in disease.
- 010321-0203 Students will explain vital signs and normal behavior.
- 010321-0204 Students will identify methods of disease control, treatment and prevention

STANDARD

010321-03 Students will determine nutritional requirements of ruminant and non-ruminant animals.

OBJECTIVES

- 010321-0301 Students will identify sources of nutrients and classes of feed.
- 010321-0302 Students will formulate feed rations.
- 010321-0303 Students will discuss feeding practices and feed quality issues.

STANDARD

010321-04 Students will explain animal genetics and reproduction.

OBJECTIVES

- 010321-0401 Students will analyze the anatomy and physiology of the reproductive system.
- 010321-0402 Students will explain the uses of genetics in animal agriculture.
- 010321-0403 Students will list and describe systems of animal breeding.
- 010321-0404 Students will explain current technologies in animal reproduction.

STANDARD

010321-05 Students will describe Meat Grading.

OBJECTIVES

- 010321-0501 Students will recognize signs of meat spoilage.
- 010321-0502 Students will describe the various characteristics, which determine grade.
- 010321-0503 Students will describe the influence grade has on preparation procedures and retail price.
- 010321-0504 Students will grade wholesale and retail cuts of beef and pork.

STANDARD

010321-06 Student will identify current topics and career opportunities in plant and animal science.

OBJECTIVES

- 010321-0601 Students will identify current topics in animal science.
- Identify the legal aspects of animal welfare and animal rights
 - Explain the regulatory aspects of biotechnology
 - Discuss ethical issues in modern biotechnology
- 010321-0602 Students will appraise career opportunities in animal science.
- Use available handbooks, career information, and computerized career information delivery systems to aid career exploration or to formulate tentative career choices
 - Match interests and aptitudes to an occupational area
 - Identify the skills, education and preparation needed for an occupational area
 - Interview prospective employers
- 010321-0603 Students will appraise career opportunities in plant science.
- Students will identify career opportunities and the education needed in the plant science area.
 - Students will demonstrate an understanding the history of agriculture.

STANDARD

010321-07 Students will demonstrate an understanding of soil science.

OBJECTIVES

- 010321-0701 Students will explain soil forming factors..
- 010321-0702 Students will describe basic biological, physical, and chemical properties of soil.
- 010321-0703 Students will analyze soil fertility.

STANDARD

010321-08 Students will demonstrate an understanding of plant structure and function.

OBJECTIVES

- 010321-0801 Students will demonstrate an understanding of cells and seeds, the basics and beginnings.
- 010321-0802 Students will recognize roots and shoots.
- 010321-0803 Students will analyze inside the stem, roots and leaves.
- 010321-0804 Students will understand plant adaptations used for protection.
- 010321-0805 Students will explain the control of plant growth and development.
- 010321-0806 Students will describe the uptake and use of water, minerals, and light.
- 010321-0807 Students will explain plant reproduction.

STANDARD

010321-09 Students will demonstrate an understanding of agronomy.

OBJECTIVES

- 010321-0901 Students will demonstrate skills relating to the interrelated human, scientific, and technological dimensions of crop production and the resources necessary for producing domesticated plants.
- 010321-0902 Students will describe the growth and development of major crops.
- 010321-0903 Students will explain the selection of planting and seeding methods and dates.

- 010321-0904 Students will determine the fertilization needs of crops.
- 010321-0905 Students will manage crop production for maximum profit efficiency.
- 010321-0906 Students will understand how to harvest and manage forages.
- 010321-0907 Students will explain the process of harvesting grain crops.
- 010321-0908 Students will determine proper storage of crops.

STANDARD

010111-10 Students will understand basic Agricultural Business Management Procedures

OBJECTIVES

- 010111-1001 Students will understand agriculture credit.
- Students will understand credit and its role in agribusiness.
 - Students will analyze and compare credit sources and types, calculate repayment ability, and costs of credit.
- 010111-1002 Students will maintain agriculture records.
- Students will understand record-keeping procedures including accounting and bookkeeping systems, as well as inventory and depreciation procedures commonly used in production agriculture and agribusiness.
 - Students will maintain and complete a set of financial records based on a Supervised Agricultural Experience Project (SAE) or a simulated class activity.
- 010111-1003 Students will understand cash flow statement, planning, and analysis.
- Students will understand agricultural budgeting, cash flow analysis, and the use of records for planning and analysis.
 - Students will prepare an enterprise budget and a cash flow statement.
 - Students will determine how to make management decisions based on financial and production records.

STANDARD

010111-11 Students will understand marketing, sales, and purchasing.

OBJECTIVES

- 010111-1101 Students will understand commodities and marketing.
- Students will understand marketing functions and concepts in agribusiness management.
 - Students will identify and describe the major legal and insurance concerns of an agribusiness.
 - Students will design a marketing plan for an agricultural product or service.
- 010111-1102 Students will analyze purchasing options.
- Students will understand purchasing and leasing options involved in agriculture.
 - Students will analyze and compare costs of options such as leasing versus purchasing, new versus used equipment, and volume buying.

STANDARD

010321-12 Students will demonstrate computer applications skills.

OBJECTIVES

- 010321-1201 Students will understand the application of the computer in agribusiness for decision making and office management.
- 010321-1202 Students will perform business operations using database, word processing, and spreadsheet software.